Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte H. SPRAGUE ACKLEY

Appeal No. 1999-0236
Application 08/624,173[1]

ON BRIEF

Before STONER, Chief Administrative Patent Judge, and JERRY SMITH and BARRETT, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

[1] Application for patent filed March 29, 1996, entitled "High Resolution Laser Imager For Low Contrast Symbology."

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1, 2, 4-6, 8-16, 18, and 19. Claims 3, 7, and 17 have been canceled.

We reverse.

BACKGROUND

The invention relates to a method and device for imaging low contrast symbols. It was known to form two-dimensional bar code symbols directly onto the ceramic or plastic package of electronic components by laser etching or other precision machining processes. A drawback of etched or machined symbols is that they have very low contrast because there is little color difference between the characters and the uncut surface and, to compound this problem, electronic components often have a dull black finish that tends to obscure the symbol characters. As a result, symbols are difficult to read.

In Appellant's invention, a pair of laser diodes 34 on the scanner 10 are oriented at an angle so they produce beams that intersect at a point directly in front of a window 24 and within the field of view of a CCD element 36. The operator may pull the trigger 14 to a first position for focusing, which illuminates the laser diodes 34 at a first (or lower)

intensity level. The crossed beams enable the operator to position the scanner 10 until the intersection point of the beams coincides with the bar code symbol 18. Then the operator pulls the trigger 14 to illuminate the diodes 34 at a second (or higher) intensity level. This higher intensity level, coupled with the intersection of the beams, results in the symbol being brightly illuminated so that a high resolution image of the symbol 18 can be reflected onto the electro-optical element 36 to be decoded. The use of a low intensity level for focusing decreases the power consumption.

Claim 6 is reproduced below.

> 6. A device for imaging low contrast symbols comprising:
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> a housing;
>
> an electro-optical element disposed within said housing and visible through an opening in said housing; and
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> means for illuminating a singular point within a field of view of said electro-optical element, said illuminating means providing light to said electro-optical element that has reflected off a symbol positioned at said point, said illuminating means further comprising first means for illuminating said point to focus said electro-optical element on said symbol with said light at a first intensity level, and second means for illuminating said point with said light at a second intensity level to permit scanning of said symbol by the electro-optical element.

THE PRIOR ART

The Examiner relies on the following prior art:

Honda	5,463,213	October 31, 1995
Hanson	5,468,950	November 21, 1995
Sherman	5,502,297	March 26, 1996

Sherman discloses a handheld bar code scanner which reduces electrical power consumption during periods of nonuse while maintaining the scanner immediately ready for use. The scanner has a light emitting diode (LED) source 80 of a series of light pulses having a certain duty cycle, an optical system to transmit the pulses in a predetermined direction, and a circuit to detect any light pulses reflected from the surface. One of the greatest power consuming elements in a handheld bar code scanner is the illumination beam source. The illumination beam is only needed when the scanner is sufficiently close to a surface which may carry a bar code symbol that it can be used. Sherman discloses detecting the presence of a surface by sensing reflections from the surface and changing between a normal operating mode and a standby (low power) mode. In normal operating mode, the LED 80 is pulsed (e.g., chopped on and off at a 40 kHz rate) at a peak current of up to 80 mA with a 50% duty cycle (col. 4,

lines 21-24 and 28-30; col. 25, lines 59-62). In standby (low power) mode, the LED is chopped with the same amplitude and on-time pulse width as during normal operation, but with a 0.8% duty cycle (col. 4, lines 24-27; col. 25, lines 64-67), which reduces the average LED current by over 98% (col. 15, lines 22-23). If no reflection has been detected recently, the scanner goes into a low-power mode in which the LED 80 is pulsed at a very low duty cycle, reducing the power consumption to a small fraction of its operating value, and as soon as some reflection of light is detected, the circuitry switches to the operational mode and the modulation duty cycle of the LED 80 increases to 50% (col. 11, line 67 to col. 12, line 7). Sherman discloses the scanner as a wand, although it could take other forms (col. 2, lines 47-50). Although figure 1 shows the wand at a distance from the surface and projecting a light beam 20, the wand is described as having a translucent window used to contact a surface upon which the bar code symbol is printed and through which the beam of light 20 is transmitted and received (col. 3, lines 25-29).

Honda discloses a code mark (bar code) reader. An infrared camera 6 is mounted in a focus adjustable manner

above a stage 1 on which an object to be read is placed (abstract). Two laser beams irradiators 8, 8' are disposed on the side of the camera to face obliquely downwards such that one laser beam provides a spot of light elongated lengthwise (vertically) and the other laser beam provides a spot of light elongated widthwise (horizontally), and that these two light spots intersect with each other in a crisscross at the position coincident with the focus of the camera (abstract; col. 7, lines 32-45). A plurality of illumination blocks 10, each equipped with infrared LEDs 9, are disposed around the camera to illuminate the object holding stage, the angle and brightness of the illumination blocks being adjustable (abstract; col. 7, lines 46-60).

Hanson discloses a method and apparatus for reading optical information over a range of distances. The apparatus has a plurality of LED pairs, each of which emits light at a discrete wavelength to illuminate the object, which are sequentially turned on and off (col. 3, line 65 to col. 4, line 28). The reflected image produced by each wavelength of light is incident on the receiving plane 24 of a photosensitive array 22, which produces a signal corresponding

to the image (col. 4, lines 36-42). Different wavelengths will produce a focus at different distances. An image of the optically readable image that is in proper focus will properly decode, while out-of-focus images will not properly decode.

THE REJECTION

Claims 1, 2, 4-6, 8-16, 18, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sherman, Hanson, and Honda.[2] The Examiner finds that Sherman discloses the

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[2] In the first Office action (Paper No. 3), the Examiner rejected claims 1-17 "under 35 U.S.C. 103(a) as being unpatentable over the prior art cited herewith in view of that cited by the applicant" (Paper No. 3, p. 2). The final rejection (Paper No. 5) maintained the rejection in the first Office action and added Sherman. The following patents were mentioned in the first Office action, but not in the examiner's answer:

Howard	3,169,186	February 9, 1965
Taniguchi	4,677,285	June 30, 1987
Droge	5,291,028	March 1, 1994
Nakazawa	5,340,982	August 23, 1994
Bobba et al.	5,475,207	December 12, 1995
Marchi	5,483,051	January 9, 1996
Arackellian et al.	5,504,367	April 2, 1996 (filed March 21, 1994)

Because these references are not mentioned in the examiner's answer, we presume the rejection over these references has been withdrawn. See Ex parte Emm, 118 USPQ 180, 181 (Bd. App. 1957) (rejection not referred to in the examiner's answer is assumed to have been withdrawn).

The examiner's answer appears to raise a new ground of

subject matter of claim 6 except for the use of intersecting beams from at least two laser diodes, which the Examiner concludes is not recited. The Examiner finds that Honda and Hanson teach intersecting beams and concludes (EA6): "One of ordinary skill in the art when considering the problem of focusing plural illumination [?] would have first looked to the prior art and found that Honda and Hanson provide solutions that would have been obvious to employ with the Sherman system concept at the time the invention was made."

We refer to the examiner's answer (Paper No. 11) (pages referred to as "EA__") for a statement of the Examiner's position, and to the appeal brief (Paper No. 10) (pages referred to as "Br__") and the reply brief (Paper No. 12) (pages referred to as "RBr__") for Appellant's arguments thereagainst.

OPINION

Grouping of claims - claim 1 as representative claim

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rejection since the Examiner's reasoning was not presented earlier. New grounds of rejection in the examiner's answer were prohibited at the time the examiner's answer was entered. See 37 CFR § 1.193(a)(2) (amended October 10, 1997). In view of the age of the appeal, we decide the appeal rather than remanding.

The claims are grouped to stand or fall together (Br4). The Examiner selects claim 6 as the representative claim (EA4) and later refers to "[c]laim 6 the sole claim at issue . . ." (EA7). Appellant argues (RBr3-4):

> [C]ontrary to the Examiner's assertion, Claim 6 is not the "sole claim at issue" on this appeal. The Appellant has appealed the final rejection of Claims 1, 2, 4-6, 8-16, 18 and 19. According to 37 C.F.R. 1.192(b)(7), "[f]or each ground of rejection . . . the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone" (emphasis added). The Examiner can not unilaterally decide which claim of a rejected group shall form the basis for deciding the appeal.

There is nothing wrong with an examiner choosing which claim from the group to address in the examiner's answer. Normally, an appellant has already identified a representative claim in the brief. However, the Board is not bound by an examiner's (or an appellant's) selection of a representative claim. Here, the Examiner selected claim 6 as the broadest claim because of his interpretation (EA6-7) that claim 6 does not have the limitation of "at least two laser diodes," as recited in independent claims 1 and 15, or "a plurality of laser emitters," as recited in independent claim 18. We conclude that the "illuminating means" in claim 6 must be construed to cover at least two laser diodes, as discussed

infra. Since it is easier to discuss the structure of two laser diodes, we choose claim 1 as representative. Claims 6, 15, and 18 contain similar limitations. This does not affect the Examiner's rationale.

Timeliness of examiner's answer is not reviewable

Appellant argues (RBr1) that the examiner's answer was not timely filed within two months of the brief pursuant to Manual of Patent Examining Procedure (MPEP) § 1208 and should not be given consideration. Appellant argues that the Examiner's delay serves to prejudice Appellant by unnecessarily prolonging prosecution.

The Board's jurisdiction is limited to those matters involving the rejection of claims. See In re Hengehold, 440 F.2d 1395, 1404, 169 USPQ 473, 480 (CCPA 1971). Accordingly, we do not decide whether to strike the examiner's answer as untimely. Nevertheless, we note that the two-month period in MPEP § 1208 is procedural in nature and is not a rule. Moreover, it is unlikely that an examiner's answer would ever be stricken as untimely because otherwise there would be no response to the brief. The timeliness of an

examiner's action is an element of the examiner's performance plan.

Claim 6 interpretation

Claim 6 is drafted in mean-plus-function format as permitted under 35 U.S.C. § 112, sixth paragraph. Appellant argues that the Examiner erred in stating that "[c]laim 6 the sole claim at issue does not recite [']at least two laser diodes'" (EA7). Appellant argues (RBr4) that the "means for illuminating a singular point within a field of view" (the "illumination means") must be interpreted in light of the structure disclosed in the specification to include at least "a pair of laser diodes 34 . . . that . . . produce respective beams that converge inward to intersect at a point" (specification, p. 6, lines 16-17). We agree with this interpretation. Thus, although the Examiner is correct that claim 6 does not literally recite two laser diodes, Appellant is correct that the "illumination means" must be construed to cover two laser diodes and equivalents thereof. Nevertheless, for purposes of discussion, we rely on claim 1.

Obviousness

Appellant argues that "none of the references suggest or disclose 'exciting said at least two laser diodes at a first intensity level to properly focus the electro-optical element on the symbol and at a second intensity level to illuminate the symbol sufficiently for scanning by the electro-optical element,' as recited in independent Claims 1 and 18" (Br6). Claims 6 and 15 include similar language. Appellant argues that Sherman alternates the LED between "on" and "off" states during the duty cycles and, when "on," only one intensity level is disclosed for this beam, and, when "off," it does not produce a beam that can be used for either focusing or illuminating the bar code (Br12). Appellant argues that even if the "off" portion of the duty cycle is construed as a second intensity level, Sherman does not perform focusing during this portion of the duty cycle (Br11-12). Appellant argues that Sherman is not concerned with focusing at all. It is argued (Br12) that the translucent window 38 of the scanning wand is in contact with the surface (col. 3, lines 26-28) and, thus, the wand is always in focus when contact is made with the surface.

The only relevant language in the rejection about focusing is the following (EA5-6): "In col. 12, line 5 of Sherman when the light of Sherman at low intensity, low duty cycle has been properly focused on the symbol bearing surface by the operator observing the held scanner 10 illumination (as clearly shown in fig. 1 of Sherman) the high duty cycle modulator of Sherman (appellant[']s second means) increases the amount of light or the 'intensity' outputted form [sic, from] the Sherman illuminator."

We agree with Appellant that there is no express or implied teaching or suggestion of any focusing in Sherman. The scanning wand in Sherman is always in focus when the window is in contact with the surface. The Examiner's reasoning is erroneous. Sherman uses the same amplitude and on-time pulse width signal in both the normal operational and the standby (low power) modes (col. 4, approx. lines 22-28); only the duty cycle (the ratio of the on time to the total time) is changed. Thus, Sherman employs light of the same "intensity," i.e., amplitude, but a different duration. This does not meet the claim requirement for two different intensity levels.

Sherman also does not disclose two laser diodes.

Honda and Hanson do not cure the deficiencies of Sherman. Honda discloses the use of two intersecting beams to indicate the proper focus for the reading camera. This is the same purpose as the laser diodes at a low intensity level for focusing in the claims. However, the laser beam irradiators in Honda are used only for focusing and not to illuminate the symbol sufficiently for scanning. The adjustable infrared diodes 9 in the illumination blocks 10 are used to illuminate the symbol for scanning. The laser beam irradiators operate only at one intensity level. Hanson discloses a pair of LEDs that is used for scanning. This is the same purpose as the laser diodes at a high intensity level for scanning in the claims. However, a single pair of LEDs is not used for focusing at a fixed distance. The plurality of pairs of LEDs are used to focus at different distances. The LEDs operate at only one intensity level. Thus, while Honda and Hanson disclose using a pair of LEDs for two different purposes, focusing and scanning, neither Honda or Hanson discloses operating the LEDS at a low intensity for focusing and at a high intensity for scanning the symbol. Moreover, the

Examiner has provided no cogent reasons why (or how) one of ordinary skill in the art would have been led to modify Sherman to incorporate the teachings of Honda and Hanson.

The Examiner stated (EA8): "If the 'intensity levels' are not controlled by duty cycle or scanner pulsing then the claims are insufficiently disclosed since no other structure or circuity for intensity control has been discussed in the specification or shown in the drawings." We agree with Appellant's arguments (RBr1-2) that the specification clearly discloses that the two intensity levels are controlled by a trigger which is placed in one of three different positions: off, low intensity, and high intensity. Thus, a simple switch is all that is needed to perform the control.

The Examiner has also stated (EA9): "It is rather the appellant who has used 'hindsight' when considering the problems of producing a scanner of two scanning levels." "Hindsight" does not seem to be the right choice of words; perhaps the Examiner meant to say "routine skill in the art." In any case, the Examiner fails to show that the references would have suggested the claimed subject matter to one of

ordinary skill in the art and, so, there is no "hindsight" (to use the Examiner's word).

For the reasons discussed above, the Examiner has failed to establish a prima facie case of obviousness. The rejection of claims 1, 2, 4-6, 8-16, 18, and 19 is reversed.

REVERSED

BRUCE H. STONER, JR. Chief Administrative Patent Judge	)	
JERRY SMITH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LEE E. BARRETT Administrative Patent Judge	)	

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